

GIRDERS WITH TENSION RODS.

Fig. 1

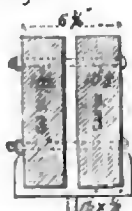


Fig. 2



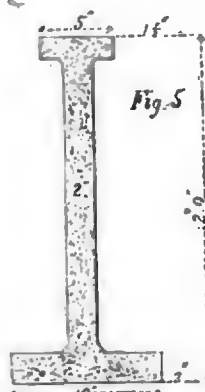
End Enlarged.

Fig. 3



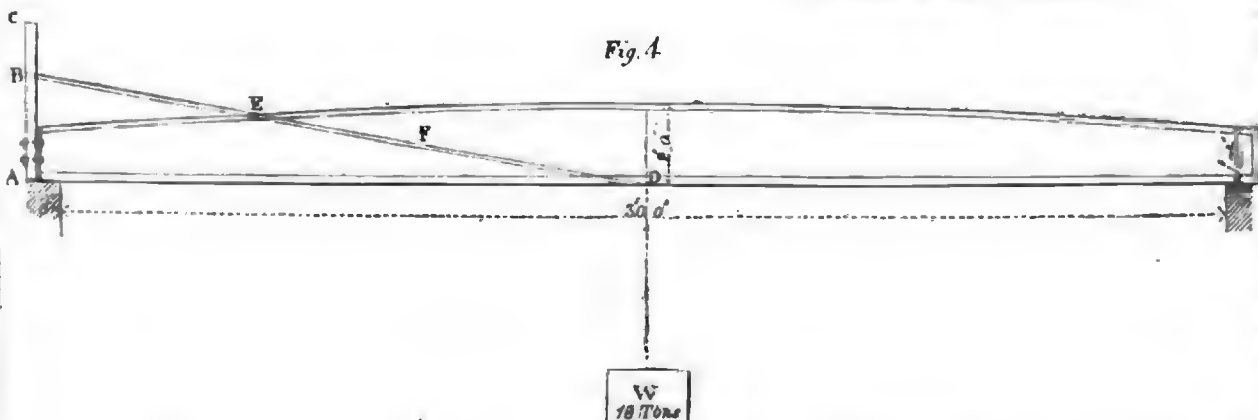
Section through Centre of Fig. 1.

Fig. 5



Section through Centre of Girder, Fig. 4.

Fig. 4



EXPERIMENTS ON THE UTILITY OF TENSION RODS, AS SOMETIMES APPLIED TO GIRDERS.

The following is a record of the experiments conducted at Mr. Cubitt's, Thames Bank, to which we referred in a recent number.

Fig. 1 is an elevation and fig. 3 a section of a wood beam, trussed with an iron rod. The two pieces of timber forming the beam were bolted together, and the tension-rod introduced between them. The beam was at first tried with the nuts at end of rod loose; they were afterwards tightened up, and the beam loaded precisely as before.

Only 52 cwt. were applied to the beam before the tension-rod was tightened up; had more been added, it was considered the beam would have been strained, and the tension-rod would not have had a fair trial. The results are given in the following table:—

Weight applied to middle of Beam.	Deflection with Nuts of Tension rod loose.	Deflection with Nuts of Tension rod tightened up.
Cwt.	Inches.	Inches.
15	35	324
30	71	637
33	1'105	1'01
40	1'375	1'30
55	1'75 set 1-16th "	1'7
60		2'05
73		2'35
90		2'75
95		3'75
100		5'975

* This set ought to be added to the deflections in the adjoining column.

Fig. 4 is an elevation of a large cast-iron girder or beam, at the end of which is shewn a piece of wood AC securely fixed. EF is a stout rod (representing the position of a tension bar), one end turning on a centre B, and the other end resting on a block D fastened to the bottom flange of the girder, at equal distances from the bearings.

The object of this experiment was to shew, on applying the weight W, how much the distance BD increased; or, in other words, to what extent a tension bar fixed at the points BD would be stretched.

The variation in the distance BD was taken by a vernier, one scale of which was affixed to the block D, the other to the rod EF. The height of the point B, above A (or the bottom of the beam), was varied in the experiment.

The weight or load was applied by means of hydraulic pressure, and the deflection with 18 tons was 6-10ths of an inch.

When the height of the point B above A was 1 ft. 5½ in. the distance BD increased .038 inch.

When the height of the point B above A was 2 ft. the distance BD increased .0217 inch.

When the height of the point B above A was 3 ft. the distance BD increased .0064 inch.

A similar experiment was made with a cast-iron beam of different dimensions; the particulars and details are as follow:—

Length of bearings 24 ft. 10 in.

Depth of beam in middle 1 ft. 4½ in.

Do. at ends 7½ in.

The weight applied to the middle was 12 tons, the deflection 7-10ths of an inch.

When the height of the point B above A was 1 in. the distance BD increased .0382 inch.

When the height of the point B above A was 10 in. the distance BD increased .013 inch.

When the height of the point B above A was 1 ft. 8 in. the distance BD decreased .0145 inch.

When the height of the point B above A was 2 ft. 6 in. the distance BD decreased .034 inch.

We leave our readers, for the present, to make their own deductions.

We have before us a long and valuable series of experiments on girders, made for Mr. C. Parker, architect, by Mr. G. B. Cooper, of Drury-lane, to which we shall give early attention.

MEMS. ABOUT GAS.

Our further remarks on the returns made by the gas companies to the House of Commons must give place, in the meantime, to an accumulation of miscellaneous notes on points, for the most part, of a more temporary and fleeting interest in the progress of the general movement towards cheap gas and an abundant diffusion of its benefits.—The Gas Movement is gradually but steadily worming itself into the most vital interests, and anxieties, and resolutions, of the people, far and wide.—At Abergavenny, an improvement of the 'farthing rushlights' at present dispensed to the public, is said to be much wanted, and a new gas company, therefore, is about to be formed.—Under the now well-recognised head of 'The Gas Movement,' the *Bedford Times* intimates that the price of gas at Bedford has been reduced from 10s. to 7s. 6d., and that the inhabitants are much in want of an extension